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DATA ON CONSTRUCTION, PRODUCTION OF USSR ELECTRIC POWER FACILITIES

/This report presents information on USSR electric power development, by republics, primarily from 1952 and early 1953. Soviet newspapers and periodicals, but with some data from earlier books and periodicals.

Numbers in parentheses refer to appended sources./

The investment of the Ministry of Electric Power Stations in the construction of hydroelectric power stations in 1952 amounted to 182 percent of the 1950 investment. In 1955, it is planned to invest three times more than in 1950.(1)

At present, all the hydroelectric power stations of the ministry which supply power to industries are controlled automatically.(2)

On 1 January 1952, the capacity of the remote-controlled hydroelectric power stations represented 27 percent of the total capacity of the ministry's hydroelectric power stations. By the end of 1952, it was planned to increase the capacity of remote-controlled hydroelectric power stations to over 40 percent of the total. Among those GES which were to be converted to remote control in 1952 were five large ones which were to be controlled from distances of 100-300 kilometers.(3)

Increases in the capacities of hydrogenerators installed between 1927 and 1939 are illustrated below:

Year Installed	Capacity (kw)	Installed at
1927	4,000	Zemo-Avchal'skaya GES
1927	7,000	Volkhovskaya GES
1932	24,000	Svir'skaya GES
1932	62,000	Dneprovskaya GES
1939	55,000	Rybinskaya GES (4)

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At the majority of hydroelectric power stations, including Uglichevkaya and Shcherbakovskaya, the portions of the structures housing power plants which are above water level are constructed of bricks. At Mingechaurskaya GES, the structure consists of reinforced-concrete frame and pumice stone block walls.(5)

RSFSR

Leningrad's power supply is to be improved during the Fifth Five-Year Plan by building several new TETs and GES, including the Narvskaya GES.(6)

During the last 3 years, [1950 - 1952?], the capacity of the electric power stations of the Moscow Power System increased 34 percent and their output 43 percent. Residents, offices, and public service enterprises of the capital were supplied in the past with 120-volt current for their lighting needs. Since the wires in many sectors of the city became overloaded because of the increased consumption of electric power, transformer stations now supply a 220-volt current, which is stepped down to 120-volts at the inlets to the buildings of consumers. This has already improved power supply in many rayons of the city.(7)

Kashirskaya GRES, construction of which started in March 1919, was completed and put into operation on 4 June 1922. It burns coal dust from the Moscow Basin. In 1932, the station's capacity was 15 times greater than the original installed capacity in 1922.(8)

The station operates at a medium steam pressure and burns coal of high ash and moisture contents. During 30 years of operation, the fuel consumption at the GRES decreased from 1,526 grams of standard fuel per one kilowatt-hour produced in 1922 to 494 grams in 1951. During the same period, the power consumption for the station's own use decreased from 26.33 percent to 6.32 percent of the station's output. During the period 1928 - 1932, the original unit of the station was modernized and a second one installed. During the following 20 years, consumption of fuel decreased from 613 grams in 1933 to 494 grams in 1951, or 19 percent, and the power consumption for the station's own use decreased from 10.7 percent to 6.32 percent of the station's output, i.e., 40 percent. The turbine of one of the generating units, which represents the major portion of the GRES's capacity, operates at a steam pressure of 29 atmospheres. Its average fuel consumption in 1951 was 473 grams per kilowatt-hour. The turbine of the original generating unit operates at a steam pressure of 15 atmospheres.

Other large power stations operating on medium steam pressure, and burning such brown coals as the Moscow, Chelyabinsk, and Bogoslovsk coals, consume at best between 490 and 500 grams per kilowatt-hour. Some stations which succeeded in reducing their fuel consumption to 470-475 grams per kilowatt-hour either operate on high steam pressure or supply heat as well as electric power (TETs).(9)

Klimanov is deputy chief of the Kashirskaya GRES; D. A. Ermakov is the chief engineer; Kalinin is chief of the planning department.(10) Tarasov is chief of Mechanical Shop.(11)

The GRES is located on the wooded bank of the Oka River, 4 kilometers from the city of Kashira. The new town of Kaganovich has grown up around the GRES.(11)

The 120-kilometer Kashira-Moscow Power Transmission Line of 110,000 volts was completed in 1922. The copper wires of the line were suspended on 11-meter-high wooden poles spaced 100 meters apart. The line is still in operation and transmits the output of the GRES, whose capacity increased during 10 years (1922 - 1932) from an original 12,000 kilowatts to more than twice the maximum planned capacity of 100,000 kilowatts.

The equipment of the GRES which was evacuated during World War II has since been reinstalled and the GRES was put into operation within 4-6 months.(12)

Lithuanian, Latvian, and Estonian SSRs

The Fifth Five-Year Plan provides for increasing the electric power output in the Lithuanian, Latvian, and Estonian SSRs from 2 to 2.5 times. The construction of a TETs is planned in Riga.(13)

Belorussian SSR

The electric power generating capacity of the Belorussian SSR is 2.5 times greater than before World War II. Larger power systems of the republic, such as the Minsk and Vitebsk systems, are not connected into one system even though the Minsk system has a surplus output which could help Vitebsk, Mogilev, and Orsha. The Bobruysk and Gomel' power systems are also separate systems.(14)

Ukrainian SSR

During the last 3 years /September 1949 - September 1952?/, the capacity of electric power stations in the Ukrainian SSR increased 63.8 percent and the power output 86.3 percent. The increase is not sufficient to catch up with the increased demand for electric power.(15)

Kurakhovskaya GRES is under construction near Kurakhovka, Stalinskaya Oblast.(9) Its first turbogenerator was put into operation in 1951.(16)

Georgian SSR

Production of electric power in the Georgian SSR is lagging greatly, and is insufficient to satisfy the needs of the people's economy. The shortage of electric power greatly retards the development of some very important industries.

At the end of 1951, the installed generating capacity of the Gruzenergo (Georgian Regional Electric Power Administration) was 161.8 percent of 1948 capacity. Even after completion of the Ortachal'skaya GES in Tbilisi and of others now under construction, the shortage will continue and is expected to become more acute in 1955. To cope with the situation, it is necessary to start construction of additional hydroelectric power stations in 1953 and not later than in 1954 or 1955. These GES are to be built on the Tskhenis-Tskhali, Rioni, Khrami, and Paravani rivers. After their completion, the installed generating capacity of the republic will rise to more than four times the 1951 capacity. Only by carrying out this large building program will it be possible to eliminate the shortage of electric power. The plan is quite feasible since the republic's available water power is estimated at roughly 12 million kilowatts with an output of 108 billion kilowatt-hours per year.(17)

About 57 percent of the installed electric power generating capacity of the Georgian SSR is represented by large electric power stations located in Tbilisskiy Rayon: Za (Zemo-Avchal'skaya) GES, Chitakheviyskaya GES, Tbilisskaya TETs, and Rustaviyskaya TETs. It is necessary to enlarge these stations and improve their performance.(18)

The first aggregate of the Za GES, built on the Kura River, was in operation on 26 June 1927, supplying power to Tbilisi. By 1938, the capacity of the GES had increased threefold.(19)

The Ortachal'skaya GES is expected to be in operation by the middle of 1953.(20)

Armenian SSR

The construction of the Sevano-Zanginskiye series of hydroelectric stations on Lake Sevan and the Zanga River which are now in operation, has resulted in the appearance of large areas of dry ground on Lake Sevan.(21)

The installed electric power generating capacity of the Armenian SSR is to increase 2.3 times after completion of the Gyumushskaya GES.(22) It is estimated that the cost of its construction will reach 585 million rubles and that the cost of one kilowatt-hour produced by the GES will be 1.43 kopeks. The structures of the GES are spread along the river for 20 kilometers. Since Lake Sevan stores large quantities it will be able to furnish a constant water supply to the GES.(23) G. Agabafov is the chief of the construction of the GES.(24)

Azerbaydzhan SSR

Installed electric power generating capacity of the Azerbaydzhan SSR in 1950 was four times greater than in 1929.(25)

At the end of the Fifth Five-Year Plan, it is planned to more than double the capacity by putting the Mingechaurskaya GES into operation, and by enlarging the existing electric power stations.(26)

The Mingechaurskaya GES is to be completed within the first half of 1952.(27) When its working plans and specifications were approved by the Collegium of the Ministry of Electric Power Stations, the area of the reservoir was to be 630 square kilometers and to hold 17 cubic kilometers of water. About 10 million cubic meters of earth were to be excavated, 17 million cubic meters filled, one million cubic meters of concrete and reinforced concrete placed, and 25,000 tons of metal used for metallic structures.(28)

Kazakh SSR

In the Kazakh SSR, the Fifth Five-Year Plan provides for the completion of Ust' Kamenogorskaya GES, Alma-Atinskaya GES, and Ozernaya GES. It also provides for the completion of the work which will make the series of hydroelectric power stations on the Alma-Atinka River automatic in 1952. Construction of the Bukhtarminskaya GES is to be started during the Five-Year Plan period.(29)

Scores of mountain streams originate in the glaciers of the Ala-Tau Mountain Range; gradually they are being harnessed to generate electric power. Alma-Atinka, one of the streams, flows a short distance between a glacier on the Tuyuk-Su Mountains and the foothills. Several hydroelectric power stations, including one built quite recently, are in operation there.(30)

The Georgiyevskaya interkolkhoz GES of 1,480-kilowatt capacity was in operation at the end of 1951 in Kurdayskiy Rayon of Dzhambul'skaya Oblast. The GES serves a cement plant as well as agricultural enterprises.(31)

Turkmen SSR

Electric power production in the Turkmen SSR is lagging so much behind that the shortage is seriously retarding further development of industries in the republic. The shortage is especially acute in Ashkhabad, where the Ash GES is in very bad shape. Construction of the planned steam electric power station has not yet started.(32)

Kirgiz SSR

The Kirgiz SSR has rich water power resources. Production of electric power is lagging far behind the development of the economy.(33) To cope with the situation it is planned to construct and put into operation during the Fifth Five-Year Plan Alamedinskaya GES No 4, Alamedinskaya GES No 5, Oshskaya GES, Talasskaya GES, Tokmakskaya GES, and Narynskaya TES. Plans call for starting the building on the Chu River of the Dzhil-Arynskaya TES series of hydroelectric power stations in Frunzenskaya Oblast, and of the Sharikhanskaya GES series in Oshskaya Oblast.(34)

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